i) Title of the Research-

"ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN FISHERY ENTERPRISE- AN EXPLORATORY STUDY IN COASTAL ODISHA"

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ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN FISHERY ENTERPRISE – AN EXPLORATORY STUDY IN COASTAL ODISHA

Synopsis

Introduction

Nowadays fishery is becoming more knowledge intensive. Access to the right information at the right time and in the right form helps fishermen to make informed decisions on the critical issues. This added more importance for resource poor and poorest of the poor fish farmers living in rural areas. Access to the right information is no more a luxury rather it is necessary for the farming community. Hence, there is a greater expectation from the extension system today. However, how well it is prepared to meet these demands is a big question. Heavily understaffed with little integration along with support of other stakeholders and not much dependence on farmer's feedback for its planning process put extension in critical situation. This points towards today's extension with greater expectations and demands the extension to assume a prominent position in the entire information exchange process at farm level and beyond.

Streamlining extension service has been identified as one of the critical interventions that will drive to educate people on climate variability, weather forecasting, preventive measures, technological adoption and use by smallholder farmers. Reviewing country's extension system will be critical in identifying gaps and areas where strategic improvements needs to be made to enable improved information management to contribute to raising agriculture productivity and ensuring food security in the country. Such strategies will focus on innovative approaches for embracing modern ICT-based extension to speed up production technology and market information dissemination to farmers and other stakeholders in the primary production sector.

Importance of Information and Communications Technology (ICT)

Information and communication technology emerged as a great saviour to the extension system during the early nineties. Since then ICT has been developing and growing fast with the changing scenario in agro-sector with respect to climate change, markets and technological developments within the country and outside. Now social networking websites like Face book and e-groups have allowed users from all over the world to remain in contact and communicate on a regular basis.

ICTs are mostly used to disseminate information to cover larger masses over a short span of time. Potential of ICTs is therefore visible in the areas involving information common to many people or dissemination of such of the knowledge/ information more effectively which is generic and is relevant to a larger population or in imparting common training to rural communities. Though it emerge as a tool for knowledge management, quite often it is also linked to the disadvantages of lacking local relevance of content, which is also not customised to the capacity of users. Human intermediation is therefore very important in ICT application. With a more systematic and considered approach ICTs can provide a great support in the distance learning. If used intelligently ICT can provide greater opportunities for meeting the challenge before extension system today. Today there are many ICT providers working in the country and engaged in information communication in the agro-sectors. There is much evidence that information and communication technologies (ICTs) are drivers of economic growth. As a result, government is keen to promote ICT take-up, particularly

where there is economic development need. The rural economy in most countries is regarded as that which requires intervention in order to foster sustainability and development, and there have been many empirical studies of both the value and the use of ICTs in rural areas. These are, however, highly disparate, often being industry-, country- and, indeed, type-of-technology-specific. Aims to draw together the highly eclectic literature on the use of ICTs in rural small to medium-sized enterprises (SMEs) in order to provide an overview of generic issues, relevant to policy.
Some of these are as follows:

1. **Kisan Call Centers (KCC)**
   To harness the potential of ICT in Agriculture, Ministry of Agriculture took a new initiatives by lunching the scheme "Kisan Call Centres (KCCs)" on 21st January, 2004 aimed at answering farmer's queries on a telephone call in farmers own dialect. These call centres are working in 13 different locations covering all the States and UTs. This scheme provides agriculture related information to the farming community through toll free number 1800-180-1551 allotted for Kisan Call Centre.

Recently KCCs have been further revamped by consolidation and appointing a new service provider for KKC namely IFFCO Kisan Sanchar Limited (IKSL- A subsidiary of IFFCO) through competitive bidding process to set up state of the KCCs at 13 identified locations. The restructured KCCs are now more professional with the following technological innovations:

- Voice/Media Gateways (IPPBX based decentralised system)
- Dedicated MPLS leased line network with dedicated bandwidth
- 100% call recoding and call replay
- Call barging
- SMS to caller farmers providing a gist of advisories given to them on phone
- Voice mail system for recording farmer's queries during idle time of KCC or during call lines busy, with provision for call back to the caller
- Soft phones in every personal computer with caller ID facility
- Up scaling the knowledge of CCAs.

2. **IFFCO Kisan Sanchar Limited (IKSL)**

The main idea of IKSL is to make use of IFFCO‟s (Indian Farmer Fertiliser Cooperative) deep extensive reach and establish a low cost telecom distribution channel through the network of cooperative societies. The project is working on public-private-NGO partnership based revenue generating business model across major states covering in two stages. The services to farmers include telecom products and services of Airtel; free daily voice updates on VAS platform (mandi prices, farming techniques, weather forecasts and fertilizer availability) and dedicated helpline for farmers to answer their queries.

The helpline number used by farmers is also used for different programmes of IKSL. It helps farmers to sharpen their current knowledge on agriculture and related activities. Now IKSL has expanded its area in 5 Zones of Odisha. Beside agriculture other focus area of IKSL is fishery sector.

Service Facilities Provided to Fisherman Community

- Free mobile SIM Card
- Free talk time worth of rupees 100/-
- Up to five free voice message
- Helpline number-534351
- Free message on fish production and management
- Weather related information

- Market price information
- Govt. schemes and its subsidy
- Satellite based sea information and extreme events of natural calamities
- Possibility of fishing catching areas and sea storm along with wind velocity.
- Phone in programme and quiz programme with fisherman community on pisciculture

3. **mKrishi**

mKrishi – Tata Consultancy Services" (TCS) Mobile Agro Advisory System (mKRISHI) connects farmers with an ecosystem that empowers them to make efficient decisions about agriculture, drive profits, and conserve the environment. This allows the farmer to make a query in a local language from a mobile phone and receive personalised advice or relevant information on the same in local language (Robert Horvath, 2008).

mKRISHI® serves to achieve the following:

- Reach farmers individually to understand their needs
- Enable farmers to receive important information about pesticides, fertilizers and soil and water conservation
- Provide critical micro-climate, weather information in order to plan farming operations
- Facilitate better production and cultivation practices
- Improve access to markets, refining the associated economy

4. **mKRISHI®** provides farmers with the benefits of Information and Communications Technology (ICT). It is an award-winning, patent-pending innovative platform that delivers services to rural communities. It connects farmers with a variety of stakeholders packaging multiple services through communication devices like mobile phones. It can also integrate wireless sensors and script technology with communication devices to provide an enhanced solution. **mKRISHI®** ensures significant business benefits to the stakeholders by enabling them to reach the farmers directly.

5. **mKisan**

mKisan SMS Portal for farmers enables all Central and State government organizations in agriculture and allied sectors to give information/services/advisories to farmers by SMS in their language, preference of agricultural practices and location.SMS Portal was inaugurated by the Hon'ble President of India on July 16, 2013 and since its inception nearly 72 crore messages or more than 210 crore SMSs have been sent to farmers throughout the length and breadth of the country.

As part of agricultural extension (extending research from lab to the field), under the National e-Governance Plan - Agriculture (NeGP-A), various modes of delivery of services have been envisaged. These include internet, touch screen kiosks, agri-clinics, private kiosks, mass media, Common Service Centres, Kisan Call Centres, and integrated platforms in the departmental offices coupled with physical outreach of extension personnel equipped with pico-projectors and hand held devices. However, mobile telephony (with or without internet) is the most potent and omnipresent tool of agricultural extension. Mobile messaging is the most effective tool so far having pervasive outreach to nearly 8.93 crore farm families.

6. **AGRISNET**

Government of India has decided to launch a Central Sector Scheme titled, 'Strengthening / Promoting Agricultural Informatics & Communications' of which one component is AGRISNET. The objective of AGRISNET is to provide improved services to the farming community through use of ICT.

Agrisnet services and its goal

a. Providing information to farmers on inputs so that they get alerted on quantity on the input and its supply chain.

b. Providing information of Govt. schemes implemented in the state.

c. Providing recommendations based on soil test results and reduce indiscriminate use of fertilizers soil health.

d. Updates farmers on latest technology in Agriculture sector for improved productivity and quality farmers.'

6. Digital Green

Digital Green is an independent non-governmental organization that focuses on training farmers to make and show short videos where they record their problems, share solutions and highlight success stories. It was first conceived as a project in Microsoft Research India's Digital Green is dedicated to improving the social, economic, and environmental sustainability of small farmer livelihoods. Their aim is to raise the livelihoods of smallholder farmers across the developing world through the targeted production and dissemination of agricultural information via participatory video and mediated instruction through grassroots-level partnerships. The unique components of the Digital Green system include:

i) A participatory process for local video production
ii) A human-mediated instruction model for video dissemination and training
iii) A hardware and software technology platform for exchanging data in areas with limited Internet and electrical grid connectivity
iv) An iterative model to progressively better address the needs and interests of the community with analytical tools and interactive phone - based feed- back channels.

7. Kisan Mobile Advisory Services (KMA)

Krishi Vigyan Kendra across Odisha is regularly sending time bound mobile message round the year on agriculture and allied sectors to farming communities. All crop related advisory services are offered by KVK subject matter specialist.

Advantages of ICT for bringing about developmental changes in the agro-sector has now been well established. The resources for ICT based knowledge and training module are also available in the country. The necessary infrastructure like, computer, mobile phone, internet etc. has also become available to farming community. Still then, many of the researches conducted earlier revealed that full potential of ICT based extension system has yet to be explored and subsequently to be used by the farming communities. The issue, role of ICT in agro-sector raised the following questions which are to be addressed through scientific interventions. Broadly these are:-

(a) What are contents being communicated through ICTs?

(b) Does it match the needs and requirement of farming community?

(c) Whether these are user friendly in terms of timeliness, usefulness, easily understandable content, matching with the prevailing agro-climatic situation, addressing seasonality of practices and knowledge thereof etc?

(d) What is the extent of use of ICT based Extension services by the users ?

(e) What is the impact of ICT based Extension Services into production, productivity based of agro-sector?

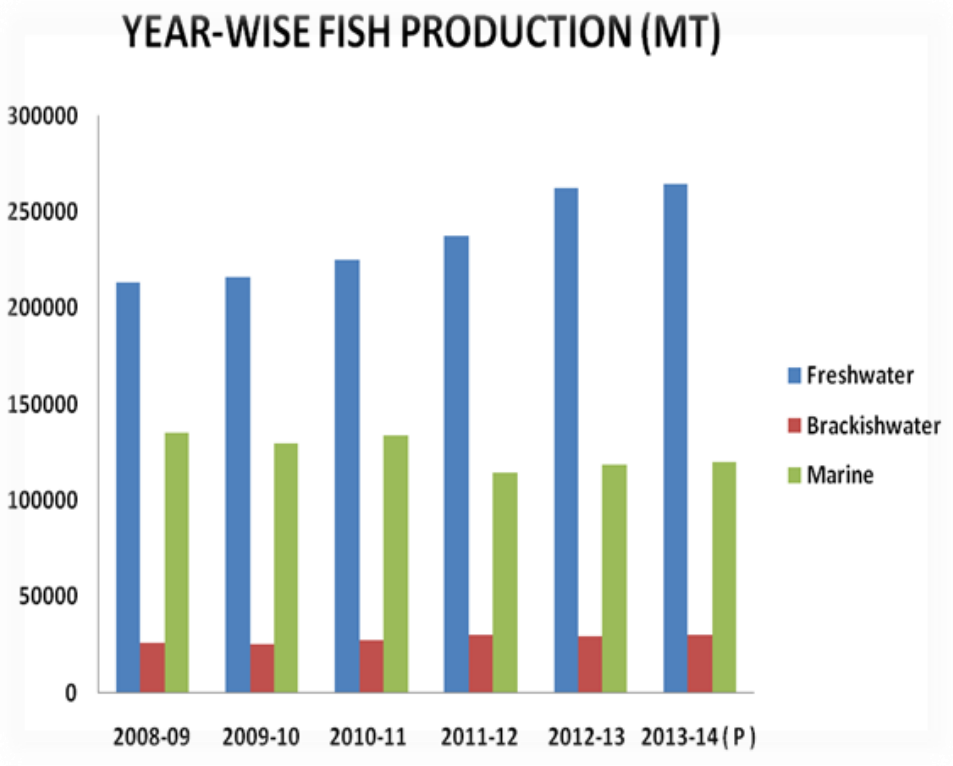
Odisha being surrounded by Bay of Bengal in the eastern side has a great potential of marine as well as inland fish cultivation. Odisha has a geographical area of 1, 55,707 sq. Km, which is 4.74% of land resources in India, but has shared of 11% of water resources of the country. Odisha has enormous water wealth in its many rivers which are scattered all over the state. They cover an annual flow of 121 million acre-feet of water. The data reveals that the socio-economic condition of the rural people of Odisha largely depends on pisciculture. The present status of pisciculture of the state is presented below.

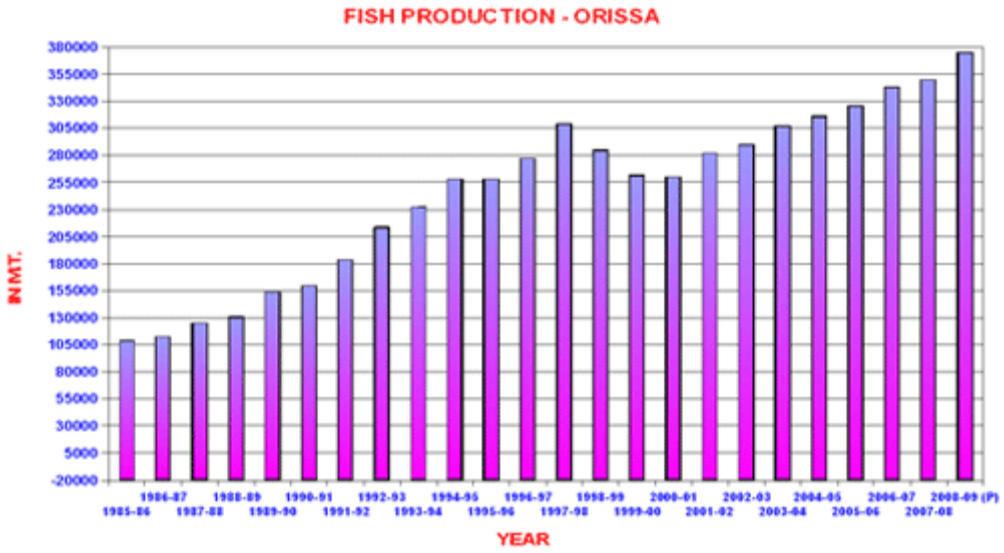
FISH PRODUCTION IN ODISHA

(Quantity in M.T.)

Year	Inland Fish			Marine Fish	Total Fish Production
	Fresh Water	Brackishwater	Total Inland fish		
1	2	3	4	5	6
1985-86	31221	23906	55127	53581	108708
1986-87	32791	24209	57000	55324	112324
1987-88	41000	23500	64500	59960	124460
1988-89	45365	24500	69865	60120	129985
1989-90	50500	25370	75870	77895	153765
1990-91	58720	22038	80758	78192	158950
1991-92	65118	22765	87883	95026	182909
1992-93	70829	22933	93762	119376	213138
1993-94	116371	11985	128356	103925	232281
1994-95	123958	10812	134770	122892	257662
1995-96	121941	12903	134844	123199	258043
1996-97	127293	16203	143496	133462	276958
1997-98	135636	16782	152418	156081	308499
1998-99	145006	14898	159904	124329	284233
1999-00	124861	10442	135303	125935	261238
2000-01	125114	13442	138556	121086	259642
2001-02	147400	20660	168060	113893	281953
2002-03	154237	19964	174201	115009	289210
2003-04	165060	24423	189483	116880	306363
2004-05	169881	23776	193657	121928	315585

2005-06	179740	23495	203235	122214	325449
2006-07	191632	22951	214583	128141	342724
2007-08	195747	22969	218716	130767	349483
2008-09	213003	26332	239335	135487	374822
2009-10	215803	25508	241311	129332	370643
2010-11	224956	27750	252706	133479	386185
2011-12	237470	30062	267532	114296	381828
2012-13	261919	29914	291833	118311	410144
2013-14 (P)	263862	30007	293869	120020	413889
(P): Provisional					





Inland Sector

INLAND FISHERMEN POPULATION : 2000-2001						
District	No. of Fishermen Village	No. of House-holds	Fishermen Population			
			Male	Female	Children	Total
1	2	3	4	5	6	7
Mayurbhanj	18	1261	3342	3036	1210	7588
Balasore	121	8337	13248	12892	11022	37162
Bhadrak	-	2667	6018	5338	1989	13345
Cuttack	493	12755	21854	19491	23966	65311
Jagatsinghpur	250	3622	7732	6658	6536	20926
Jajpur	267	8549	16703	13582	17530	47815
Kendrapara	-	-	18598	16868	15806	51272
Khurda	287	13032	18098	15957	27714	61769
Nayagarh	171	4204	8357	7267	6551	22175
Puri	132	8882	19571	16201	9100	44872
Ganjam	444	17866	27635	24952	41099	93686
Gajapati	97	1086	2569	2502	3098	8169
Kandhamal	10	193	216	215	396	827
Boudh	158	1655	2466	2473	2710	7649
Koraput	159	3016	2874	2889	5299	11062
Malkangiri	98	294	721	762	370	1853
Rayagada	40	208	239	203	220	662
Nawarangpur	24	186	194	182	525	901
Kalahandi	19	412	754	504	-	1258
Nuapara	231	488	1030	812	110	1952
Sambalpur	-	2778	4512	2456	6729	13697

Deogarh	82	973	1305	1135	1215	3655
Jharsuguda	2	8432	7051	2460	17943	27454
Bargarh	22	1599	3169	2657	2682	8508
Keonjhar	152	983	2685	2204	2219	7108
Sonepur	-	-	5600	4908	4812	15320
Bolangir	-	3148	7072	6803	-	13875
Sundargarh	-	1714	2607	2539	2975	8121
Dhenkanal	173	3681	6925	6679	9879	23483
Angul	96	1881	2938	2661	1943	7542
Total	**3546**	**113902**	**216083**	**187286**	**225648**	**629017**
Chilika	132	22032	36540	31588	54211	122339
G.TOTAL	**3678**	**135934**	**252623**	**218874**	**279859**	**751356**

Contd...

District	Fishermen engaged in Fishing Activities				Fishermen/Women engaged in Ancillary Activities				Fisher-women engaged in ancillary Activities out of Col. 15
	Full time	Part time	Occas-ional	Total	Full time	Part time	Occas-ional	Total	
1	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Mayurbhanj	1976	755	398	3129	443	165	95	703	0
Balasore	4998	5004	1631	11633	2069	2348	801	5218	2613
Bhadrak	1589	2387	1216	5192	1257	1745	1533	4535	2725
Cuttack	9399	4180	2678	16257	2509	1857	2021	6387	5599
Jagatsinghpur	3738	2351	452	6541	1982	2691	519	5192	2196
Jajpur	5225	5550	2486	13261	1168	4380	1490	7038	1362
Kendrapara	7421	4508	2664	14593	4971	2973	3327	11271	6202
Khurda	10953	2874	694	14521	4918	2118	1019	8055	4863
Nayagarh	1809	1440	987	4236	27	-	-	27	-
Puri	10216	8255	1893	20364	873	524	310	1707	564

Ganjam	9926	7018	4695	21639	7002	4702	3253	14957	7293
Gajapati	139	228	150	517	34	82	91	207	76
Boudh	3524	1332	951	5807	720	588	539	1847	-
Kandhamal	104	8	-	112	318	0	0	318	216
Koraput	2175	2078	604	4857	2135	1623	259	4017	848
Malkangiri	932	551	173	1656	286	156	70	512	141
Rayagada	100	61	104	265	30	20	41	91	4
Nawarangpur	118	14	129	261	0	0	53	53	34
Kalahandi	355	157	109	621	-	-	-	-	-
Nuapara	828	908	216	1952	23	81	15	119	28
Sambalpur	5226	656	224	6106	814	109	151	1074	60
Deogarh	34	906	120	1060	-	941	36	977	361
Jharsuguda	632	0	2196	2828	6950	6337	0	13287	6399
Bargarh	667	621	476	1764	243	487	186	916	720
Keonjhar	704	981	1003	2688	350	507	580	1437	157
Sonepur	2018	1276	347	3641	2018	1176	347	3541	-
Bolangir	2596	4946	0	7542	-	-	-	-	-
Sundargarh	941	924	644	2509	441	758	567	1766	703
Dhenkanal	836	1269	1174	3279	198	376	411	985	496
Angul	700	701	590	1991	-	-	-	-	-
Total	**89879**	**61939**	**29004**	**180822**	**41779**	**36744**	**17714**	**96237**	**43660**
Chilika	25455	3654	1827	30936	-	-	-	-	1478
G. TOTAL	**115334**	**65593**	**30831**	**211758**	**41779**	**36744**	**17714**	**96237**	**45138**

In order to transform traditional practices of fishing to a modern technology based fishery enterprise dissemination of improved appropriate technologies and their consequent adoption is of immense importance. Like other areas of production, ICT has a great role in improvement of pisciculture. Nowadays fishermen are using ICT based information for deciding upon production technologies, for management aspects, for marketing and storage etc. But still then there is real gap between the potential of ICT and its use by the fishermen. All the question related to ICT, as mentioned earlier, are also valid and pertinent in the context of pisciculture. In order to make a scientific intervention in those questions the

present study entitled “Role of Information and Communications Technology in Fishery Enterprise – An Exploratory Study in Coastal Odisha” with the following specific objectives.

Specific Objectives

1) To study the socio-economic attributes of the respondents in the study area
2) To make content analysis of the information communicated through different ICT tools on pisciculture
3) To study the extent of use of ICTs on various aspects of fish production by the respondents
4) To study the perception of fishermen regarding the benefits of ICTs in accelerating fish production
5) To assess the impact of ICTs on fish farming and fishermen community
6) To invite suggestions of the stakeholders to develop strategic policy options for the development of fishermen community

Review of Literature

1. Donors increasingly recognise the importance of ‘making markets work for the poor’ and attention to information and communication processes is of central importance in this respect. There is an extensive economic literature on the market value of information in decision-making and improving the quality and quantity of information available to the poor can significantly affect the sustainability, productivity and profitability of livelihood decisions (Chapman *et al.,* forthcoming).The rural poor depend primarily on agriculture and related activities for their livelihood, agriculture provides the bulk of their income and their main source of nutrition (IFAD, 2001).
2. Improved systems for the management and communication of agricultural information can help poor farmers make informed choices about the opportunities and constraints associated with agricultural development strategies (FAO, 1998).
3. Tripp’s (2001) assessment of future agricultural technology policies for rural development emphasises that most of the new technologies that will become available to farmers will be ‘information-intensive’, i.e. requiring increased levels of knowledge for appropriate management. In addition to basic technical knowledge, the rural poor need to be able to operate in increasingly sophisticated input and output markets.
4. The potential of ICTs to support the improvement of currently inadequate extension and education services, and ensure farmers have access to reliable information about agricultural technologies and markets, is the subject of considerable interest (Zijp, 1994; FAO, 1998).
5. The MS Swaminathan Foundation (MSSRF) in Tamil Nadu, Southern India has been experimenting with ICTs as a means of facilitating development in poor rural communities. Funded by the IDRC, Swaminathan’s *e-villages* have developed a novel approach to empowering people through increased access to information. Computer terminals (rather than tele centres) have been pre-loaded with a database of useful information relating to government services, such as agricultural extension, health and the police that contain the relevant contact details for each village.
6. According to UNDP (2001:33) many of the current ICT examples are just the beginning. Tapping the potential of these new technologies will depend on adaptations to the conditions in developing countries, especially for poor users. Much

will depend on innovations (technological, institutional, entrepreneurial) to create low-cost, easy to use devices and to set up access through public or market centres with affordable products. It is worth remembering that ICTs are information technologies and not agricultural technologies.

7. Agricultural extension systems have all too frequently underestimated the importance of free and open information flows relating to the introduction of new agricultural technologies. The main problem has been one of providing top-down information of limited local relevance to farmers who are also unable to ask questions or provide feedback to the extension services and research centres. These constraints have led extension services to focus on the importance of two-way information flows, together with a shift towards more participatory approaches in development more generally. The focus of attention on failing extension services in developing countries is occurring at a time when there is a recognition that globalisation and trade liberalisation is coinciding with the ICT revolution to create a peculiar climate of increased risks and opportunities for many developing countries. 'Knowledge and capital are at the centre of success within this new economic system.Yet some countries have yet to consider the value of making knowledge available through revived extension services' (Rivera, 2001).
8. Information is at the heart of future extension strategies and the Agricultural Knowledge and Information System (AKIS) (Roling, 1995; Rivera, 2001) adopted by the World Bank and the FAO (1998) puts farmers at the heart of the information exchange process. The emphasis therefore on improving the use of information, and placing farmers at the centre of the 'knowledge triangle' between extension, education and research, has been developed independently of more recent ICT experimentation.
9. The use of ICTs is seen by many as a pragmatic solution to the task in hand (e.g. VERCON and FarmNet, FAO, 1998).While other sectors struggle with the concept of using high-technology in rural development (e.g. in education, the African Virtual University has replicated many of the mistakes of top-down, limited user choice and feedback that has plagued extension efforts) it is possible that lessons from agricultural extension could help to illustrate how best to integrate new technologies into rural development strategies more broadly.
10. At present the priority for extension is to use ICTs to serve agricultural development goals but with increasing recognition of the importance of the rural nonfarm economy and the potential for livelihood diversification (Start, 2002) it is clear that even in this role ICTs could be used for broader rural development goals.
11. The agricultural extension programmes will take time to integrate ICTs to address the specific challenges of raising agricultural production, many of the lessons of extension experience could usefully be applied in support of broader rural development goals. Examples include the importance of two-way information flows to provide users with ongoing support, improving feedback mechanisms between users and designers of the technology, avoidance of top-down and prescriptive approaches to technology transfer and the importance of local and contextual facilitation (Roling, 1995).
12. The information has been used to greater catalytic effect in the field of agricultural development, such as the rapid spread of some new varieties in West Africa (Blench, 1998) but also nowhere more than agricultural extension has the importance of context specific information been more underestimated.
13. Poverty is increasingly accepted to be multi-dimensional and therefore strategies at every level need to be more flexible to incorporate the heterogeneous contexts and livelihoods of the poor. In this context agricultural extension and rural development strategies need to avoid standardised, 'one-size fits all' approaches. The need, therefore, to develop differentiated rural development strategies has put greater emphasis on understanding the diversity of livelihood strategies especially among

small scale family farms and the importance of non-farm income (Berdegué and Escobar, 2001).

14. In the context of agricultural extension public good type information includes weather forecasts, basic information on soils and cropping techniques, market prices and food safety etc., all of which ought to be available without restrictions or restrictive institutional controls (FAO/WB, 2000).
15. The lessons from experience with agricultural extension systems in rural development has led to an appreciation of pluralistic approaches to introducing new technology that are both participatory and sustainable (Rivera, 2001). This is based on a realisation that there is a need for flexibility within the extension system that corresponds to the contextual diversity of agricultural production, processing and marketing in developing countries
16. The development of more participatory approaches such as Farmer Field Schools (Coldevin, 2000) is based on a recognition that farmers themselves are best able to benefit from a learning environment if they have control over the information and how it is exchanged between them. This shift away from prescriptive and didactic approaches to encouraging learning through a process of facilitation mirrors the paradigmatic changes that have occurred in rural development more broadly.
17. The emphasis on multi-dimensional poverty and a recognition that the poor often operate multiple livelihood strategies according to their requisite assets (Ashley and Carney, 1999) stems from an earlier populist movement that challenged the supposed superiority of Western Scientific Knowledge over Indigenous Knowledge systems.
18. Rural development interventions are formed around alternative mechanisms for managing the processes of change that are perceived by planners to be necessary for economic development. These processes, however, rely on concepts of knowledge that are likely to differ from those prevailing at a local and community level. For example, in an economic context, rural areas are often diagnosed as suffering from 'lack of information' especially relating to the functioning of markets and market opportunities (World Bank, 1999).
19. To assume that ICTs can help provide useful and 'developmental' information simply by transcending physical distance at a greater speed and reduced cost is to ignore essential phenomenological concerns that highlight alternatives to positivism (Johnson et al., 1994:439).
20. Encouraging participation in rural development processes such as agricultural research has itself been part of a wider shift towards empowerment to achieve social and political goals and encourage more decentralised decision-making. The problem that has often been highlighted with participation, for example in agricultural technology, is that it takes place in an alternative epistemology based on a test plot where the interface and choices available are narrowly defined (Farrington et al., 1994).
21. Tripp (2001:95) emphasises the relative importance of farmer-to-farmer information exchange, for example, in accessing and utilising public seed varieties when compared with formal extension systems. Public information such as market prices can be shared through newspapers, on a notice-board, on a screen or over the radio. Illiterate farmers working in the fields may prefer the market information over the radio whereas some may be able to access prices over the Internet. The same information therefore could be accessed by different groups of users using different ICTs and it is necessary to promote partnerships that respond to the equitable exchange of information whilst at the same time empowering the different groups through an increase in information choices. Many of these choices will be based on cost in the short term and therefore focusing on information that is a public good, and should be made freely available, will help to understand information priorities for existing information rather than attempt to use ICTs to introduce whole new information systems for which the demand cannot yet be ascertained. CKPs,

therefore, should focus on understanding and overcoming the blockages to the free flow of information using ICTs, where appropriate, to provide more equitable access and widespread sharing of information. The flows of information that result from CKPs are 'two way' so that feedback such as through community radio actually contributes to the supply of information being exchanged. Public information such as weather reports can appear to be unidirectional from the meteorological centre to the listeners or readers of the report.

22. However, through a combination of dedicated local champions or intermediaries (Richardson, 1997; Mundy, 2001; Akakpo, 2001) and a cross-sectoral approach incorporating a range of local priorities such as health, education and agriculture the potential of ICTs has begun to show itself as a means of facilitating flexible approaches to address the multidimensional complex developmental needs of the poor. The strategic use of ICTs to develop CKPs in rural areas could ensure that both the knowledge and empowerment that result from increased information exchange are shared more equitably.

LOCALE AND SETTING

The study will be undertaken in Khurda and Puri district of the state of Odisha. The state lies in between 17°-31' to 22° – 27′ North latitude and 81°-27' to 87°-30' East longitude. It is bounded by West Bengal in the North East, Jharkhand in the North, Chhattisgarh in the West, Andhra Pradesh in the South and Bay of Bengal in the East. The main features of the state are given in the following table

1. Sampling Procedure-

District	**Khordha**	**Puri**	**Sampling** **(Purposive Sampling**
Block	3	3	Purposive Sampling
Gram- Panchayat (Two from each Block)	2X3=6	2X3=6	Purposive Sampling
Respondents	20 from each GP	20 from each GP	Purposive Sampling
Total Sample Size =290			

Variables to be studied

Objective I

Socio – economic Variables-

Age, Caste, Farm Holding Size, Family Type, Family Size, House Type, Extension Contact, Cosmopoliteness, Social Participation, Annual Income.

Statistical tools to be employed

(i) Descriptive Stastics

(ii) Correlation

(iii) Regression

(iv) Fog index

(v) Content Analysis

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